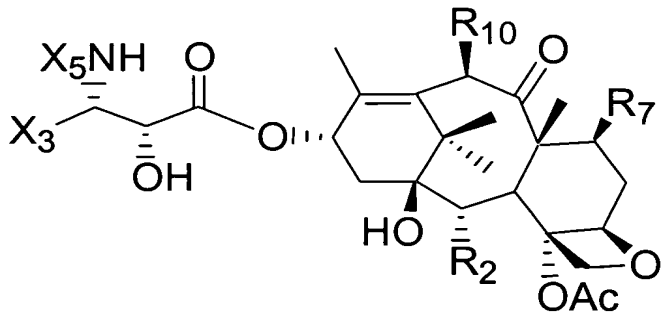
Claims

1. A method of inhibiting tumor growth in a mammal, said method comprising administering a therapeutically effective amount of a composition comprising at least one pharmaceutically acceptable carrier and a taxane having the formula



wherein

X_3 is 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, isobutenyl, isopropyl, cyclopropyl, cyclobutyl or cyclopentyl;

X_5 is $-COX_{10}$ and X_{10} is isobutenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, butenyl, isobutyl or n-propyl or X_5 is $-COOX_{10}$ and X_{10} is ethyl, n-propyl, isopropyl, or isobutyl;

R_2 is benzoyloxy;

R_7 is $R_{7a}OCOO-$;

R_{10} is hydroxy; and

R_{7a} is methyl or ethyl.

2. The method of claim 1 wherein X_3 is 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, isobutenyl or cyclopropyl and X_5 is $-COX_{10}$ and X_{10} is isobutenyl, 2-furyl or 2-thienyl or X_5 is $-COOX_{10}$ and X_{10} is isopropyl or isobutyl.

3. The method of claim 1 wherein X_3 is thienyl.

4. The method of claim 1 wherein X_3 is 2-thienyl.

5. The method of claim 1 wherein X_3 is furyl.

6. The method of claim 1 wherein X_3 is 2-furyl.

7. The method of claim 1 wherein R_{7a} is methyl.

8. The method of claim 1 wherein R_{7a} is ethyl.

9. The method of claim 1 wherein X_5 is $-COOX_{10}$ and X_{10} is isopropyl.

10. The method of claim 7 wherein X_3 is thienyl.

11. The method of claim 7 wherein X_3 is 2-thienyl.

12. The method of claim 7 wherein X_3 is furyl.

13. The method of claim 7 wherein X_3 is 2-furyl.

14. The method of claim 8 wherein X_3 is thienyl.

15. The method of claim 8 wherein X_3 is 2-thienyl.

16. The method of claim 8 wherein X_3 is furyl.

17. The method of claim 8 wherein X_3 is 2-furyl.

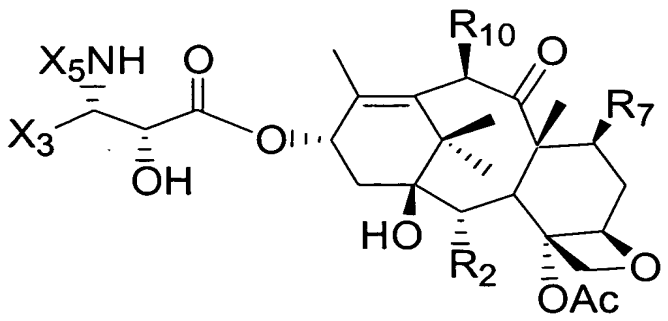
18. The method of claim 9 wherein X_3 is thienyl.

19. The method of claim 9 wherein X_3 is 2-thienyl.

20. The method of claim 9 wherein X_3 is furyl.

21. The method of claim 9 wherein X_3 is 2-furyl.

22. A method of inhibiting tumor growth in a mammal, said method comprising administering a therapeutically effective amount of a composition comprising at least one pharmaceutically acceptable carrier and a taxane having the formula



wherein

X_3 is 2-furyl, 3-furyl, 2-thienyl or 3-thienyl;

X_5 is $-COX_{10}$ and X_{10} is trans-propenyl;

R_2 is benzoyloxy;

R_7 is $R_{7a}OCOO-$;

R_{10} is hydroxy; and

R_{7a} is methyl or ethyl.

23. The method of claim 22 wherein R_{7a} is methyl.

24. The method of claim 22 wherein R_{7a} is ethyl.

25. The method of claim 23 wherein X_3 is thienyl.

26. The method of claim 23 wherein X_3 is 2-thienyl.

27. The method of claim 23 wherein X_3 is furyl.

28. The method of claim 23 wherein X_3 is 2-furyl.

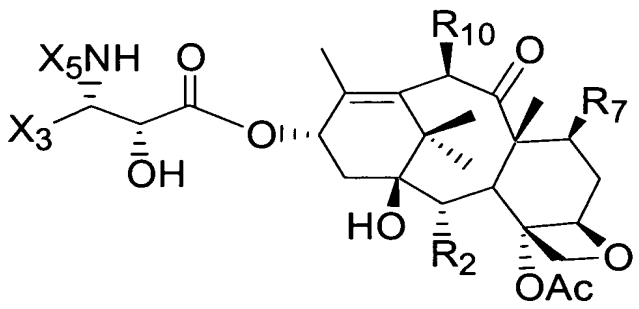
29. The method of claim 24 wherein X_3 is thienyl.

30. The method of claim 24 wherein X_3 is 2-thienyl.

31. The method of claim 24 wherein X_3 is furyl.

32. The method of claim 24 wherein X_3 is 2-furyl.

33. A method of inhibiting tumor growth in a mammal, said method comprising administering a therapeutically effective amount of a composition comprising at least one pharmaceutically acceptable carrier and a taxane having the formula



wherein

X_3 is 2-furyl;

X_5 is $-COX_{10}$ and X_{10} is isobutenyl or X_5 is $-COOX_{10}$ and X_{10} is t-butyl or t-amyl;

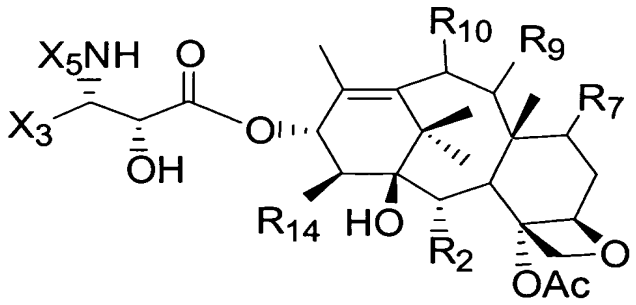
R_2 is benzoyloxy;

R_7 is $R_{7a}OCOO-$;

R_{10} is hydroxy; and

R_{7a} is benzyl.

34. A method for preparing a pharmaceutical composition comprising mixing at least one nonaqueous, pharmaceutically acceptable solvent and a taxane having the formula



wherein

R_2 is acyloxy;

R_7 is carbonate;

R_9 is keto, hydroxy, or acyloxy;

R_{10} is hydroxy;
R_{14} is hydrido or hydroxy;
X_3 is substituted or unsubstituted alkyl, alkenyl, alkynyl or heterocyclo;
X_5 is $-COX_{10}$, $-COOX_{10}$, or $-CONHX_{10}$;
X_{10} is hydrocarbyl, substituted hydrocarbyl, or heterocyclo; and
Ac is acetyl.

37. The method of claim 36 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl.

38. The method of claim 36 wherein R_7 is $R_{7a}OCOO$- and R_{7a} is methyl or ethyl.

39. The method of claim 36 wherein X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl.

40. The method of claim 36 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, R_7 is $R_{7a}OCOO$- and R_{7a} is methyl or ethyl.

41. The method of claim 36 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl.

42. The method of claim 36 wherein R_7 is $R_{7a}OCOO$- and R_{7a} is methyl or ethyl, X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl.

43. The method of claim 36 wherein X_3 is 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, R_7 is $R_{7a}OCOO$-, R_{7a} is methyl or ethyl, X_5 is $-COX_{10}$ and X_{10} is substituted or unsubstituted phenyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl, or X_5 is $-COOX_{10}$ and X_{10} is substituted or unsubstituted C_1 - C_8 alkyl, C_2 - C_8 alkenyl, or C_2 - C_8 alkynyl.

44. The method of claim 36 wherein X_3 is thienyl.

45. The method of claim 36 wherein X_3 is 2-thienyl.

46. The method of claim 36 wherein X_3 is furyl.

47. The method of claim 36 wherein X_3 is 2-furyl.